

CLAIMS

What is claimed is:

- 1 1. A method for creating a differential polish rate across a wafer
2 comprising:
3 determining the profile of said wafer, said wafer profile having high
4 points and low points;
5 providing a polish pad having a plurality of grooves;
6 adjusting the groove depth of said polish pad, wherein said groove
7 depth is increased in the areas of said polish pad that correspond to the high
8 points of said wafer profile; and
9 polishing said wafer with said polish pad.
- 1 2. The method as described in claim 2 further comprising the step of:
2 adjusting the groove width of said polish pad, wherein said groove
3 width is increased in the areas of said polish pad that correspond to the high
4 points of said wafer profile.
- 1 3. The method as described in claim 2 further comprising the step of:
2 adjusting the groove density of said polish pad, wherein said groove
3 density is increased in the areas of said polish pad that correspond to the
4 high points of said wafer profile.

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1 4. The method as described in claim 1 wherein said plurality of grooves
2 have a shape consisting of: a v-shape, a u-shape, a one-sided-triangle, or a
3 combination thereof.

1 5. The method as described in claim 1 wherein said groove depth is
2 adjusted within the range of approximately 1 - 90% of the pad thickness.

1 6. The method as described in claim 2 wherein said groove width is
2 adjusted within the range of approximately 1 - 100 mils.

1 7. The method as described in claim 3 wherein said groove density is
2 adjusted within the range of approximately 2 - 50 grooves/inch.

1 8. A method for creating a differential polish rate across a wafer
2 comprising:
3 determining the profile of said wafer, said wafer profile having high
4 points and low points;
5 providing a polish pad having a plurality of grooves;
6 adjusting the groove width of said polish pad, wherein said groove
7 width is increased in the areas of said polish pad that correspond to the high
8 points of said wafer profile; and
9 polishing said wafer with said polish pad.

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1 9. The method as described in claim 8 further comprising the step of:
2 adjusting the groove depth of said polish pad, wherein said groove
3 depth is increased in the areas of said polish pad that correspond to the high
4 points of said wafer profile.

1 10. The method as described in claim 8 further comprising the step of:
2 adjusting the groove density of said polish pad, wherein said groove
3 density is increased in the areas of said polish pad that correspond to the
4 high points of said wafer profile.

1 11. The method as described in claim 8 wherein said plurality of grooves
2 have a shape consisting of: a v-shape, a u-shape, a one-sided-triangle, or a
3 combination thereof.

1 12. The method as described in claim 8 wherein said groove width is
2 adjusted within the range of approximately 1 - 90% of the pad thickness.

1 13. The method as described in claim 9 wherein said groove depth is
2 adjusted within the range of approximately 0.01 - 50 mils.

1 14. The method as described in claim 10 wherein said groove density is
2 adjusted within the range of approximately 2 - 50 grooves/inch.

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1 15. A method for creating a differential polish rate across a wafer
2 comprising:
3 determining the profile of said wafer, said wafer profile having high
4 points and low points;
5 providing a polish pad having a plurality of grooves;
6 increasing the polish rate of said polish pad in the areas of said polish
7 pad that correspond to the high points of said wafer profile; and
8 polishing said wafer with said polish pad.

1 16. The method as described in claim 15 wherein said step of increasing
2 the polish rate comprises increasing the groove depth of said grooves in the
3 areas of said polish pad that correspond to the high points of said wafer
4 profile.

1 17. The method as described in claim 15 wherein said step of increasing
2 the polish rate comprises increasing the groove width of said grooves in the
3 areas of said polish pad that correspond to the high points of said wafer
4 profile.

1 18. The method as described in claim 15 wherein said step of increasing
2 the polish rate comprises increasing the groove density of said grooves in
3 the areas of said polish pad that correspond to the high points of said wafer
4 profile.

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1 19. The method as described in claim 15 wherein said plurality of
2 grooves have a shape consisting of: a v-shape, a u-shape, a one-sided-
3 triangle, or a combination thereof.

1 20. The method as described in claim 16 wherein said groove depth is
2 adjusted within the range of approximately 1 - 90% of the pad thickness.

1 21. The method as described in claim 17 wherein said groove width is
2 adjusted within the range of approximately 1 - 100 mils..

1 22. The method as described in claim 18 wherein said groove density is
2 adjusted within the range of approximately 2 - 50 grooves/inch.

1 23. The method of claim 15 further comprising the step of:
2 decreasing the polish rate of said polish pad in the areas of said polish
3 pad that correspond to the low points of said wafer profile.

1 24. The method as described in claim 23 wherein said step of decreasing
2 the polish rate comprises decreasing the groove depth of said grooves in the
3 areas of said polish pad that correspond to the low points of said wafer
4 profile.

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1 26. The method as described in claim 23 wherein said step of decreasing
2 the polish rate comprises decreasing the groove density of said grooves in
3 the areas of said polish pad that correspond to the low points of said wafer
4 profile.

1 27. A polish pad for creating a differential polish rate across a wafer
2 comprising:
3 said polish pad having a plurality of grooves;
4 said grooves having an increased depth in areas that correspond to
5 high points on the surface of said wafer; and
6 said grooves having a decreased depth in areas that correspond to
7 low points on the surface of said wafer.

1 28. The polish pad as described in claim 27 further comprising:
2 said grooves having an increased width in areas that correspond to
3 high points on the surface of said wafer; and
4 said grooves having a decreased width in areas that correspond to
5 low points on the surface of said wafer.

1 29. The polish pad as described in claim 27 further comprising:
2 said grooves having an increased density in areas that correspond to
3 high points on the surface of said wafer; and
4 said grooves having a decreased density in areas that correspond to
5 low points on the surface of said wafer.

1 30. The polish pad as described in claim 27 wherein said plurality of
2 grooves have a shape consisting of: a v-shape, a u-shape, a one-sided-
3 triangle, or a combination thereof.

1 31. The polish pad as described in claim 27 wherein said groove depth is
2 adjusted within the range of approximately 1 - 90% of the pad thickness.

1 32. The polish pad as described in claim 28 wherein said groove width is
2 adjusted within the range of approximately 1 - 100 mils.

1 33. The polish pad as described in claim 29 wherein said groove density
2 is adjusted within the range of approximately 2 - 50 grooves/inch.

1 34. A polish pad for creating a differential polish rate across a wafer
2 comprising:

3 said polish pad having a plurality of grooves;

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4 said grooves having an increased width in areas that correspond to
5 high points on the surface of said wafer; and
6 said grooves having a decreased width in areas that correspond to
7 low points on the surface of said wafer.

1 35. The polish pad as described in claim 34 further comprising:
2 said grooves having an increased depth in areas that correspond to
3 high points on the surface of said wafer; and
4 said grooves having a decreased depth in areas that correspond to
5 low points on the surface of said wafer.

1 36. The polish pad as described in claim 34 further comprising:
2 said grooves having an increased density in areas that correspond to
3 high points on the surface of said wafer; and
4 said grooves having a decreased density in areas that correspond to
5 low points on the surface of said wafer.

1 37. The polish pad as described in claim 34 wherein said plurality of
2 grooves have a shape consisting of: a v-shape, a u-shape, a one-sided-
3 triangle, or a combination thereof.

1 38. The polish pad as described in claim 34 wherein said groove width is
2 adjusted within the range of approximately 1 - 90% of the pad thickness.

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1 39. The polish pad as described in claim 35 wherein said groove depth is
2 adjusted within the range of approximately 0.01 - 50 mils.

1 40. The polish pad as described in claim 36 wherein said groove density
2 is adjusted within the range of approximately 2 - 50 grooves/inch.

1 41. A polish pad for creating a differential polish rate across a wafer
2 comprising:
3 said polish pad having a plurality of grooves;
4 said grooves having an increased density in areas that correspond to
5 high points on the surface of said wafer; and
6 said grooves having a decreased density in areas that correspond to
7 low points on the surface of said wafer.

1 42. The polish pad as described in claim 41 further comprising:
2 said grooves having an increased width in areas that correspond to
3 high points on the surface of said wafer; and
4 said grooves having a decreased width in areas that correspond to
5 low points on the surface of said wafer.

1 43. The polish pad as described in claim 41 further comprising:

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2 said grooves having an increased depth in areas that correspond to
3 high points on the surface of said wafer; and
4 said grooves having a decreased depth in areas that correspond to
5 low points on the surface of said wafer.

1 44. The polish pad as described in claim 41 wherein said plurality of
2 grooves have a shape consisting of: a v-shape, a u-shape, a one-sided-
3 triangle, or a combination thereof.

1 45. The polish pad as described in claim 41 wherein said groove density
2 is adjusted within the range of approximately 2 - 50 grooves/inch.

1 46. The polish pad as described in claim 42 wherein said groove width is
2 adjusted within the range of approximately 1 - 100 mils.

1 47. The polish pad as described in claim 43 wherein said groove depth is
2 adjusted within the range of approximately 1 - 90% of the pad thickness.

1 48. A polish pad comprising:
2 a plurality of grooves, said plurality of grooves having varying
3 groove densities.

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1 49. The polish pad as described in claim 48 wherein said groove density
2 is adjusted within the range of approximately 2 - 50 grooves/inch.

1 50. A polish pad comprising:
2 a plurality of grooves, said plurality of grooves having varying
3 groove depths.

1 51. The polish pad as described in claim 50 wherein said groove depth is
2 adjusted within the range of approximately 1 - 90% of the pad thickness.

1 52. A polish pad comprising:
2 a plurality of grooves, said plurality of grooves having varying
3 groove widths.

1 53. The polish pad as described in claim 52 wherein said groove width is
2 adjusted within the range of approximately 1 - 100 mils.

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